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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the waste fluid regenerative apparatus and the waste fluid playback approach of a printing machine that single equipment separates three components, in the system in which three components of the ink pigment charged especially, an insulating penetrant remover, and conductive water were intermingled about the equipment and the approach of reproducing the waste fluid which comes out at the time of washing of the component part of the printing machine to which ink, such as a blanket drum of a printing machine, adheres.

[0002]

[Description of the Prior Art] Although waste fluid comes out at the time of washing of the blanket drum of a printing machine, or an impression cylinder, in consideration of earth environment, the motion which performs and discards a certain processing in this waste fluid is increasing. In this case, when the cost (abandonment cost) to abandonment processing starts, since a lot of penetrant removers are used for washing a blanket drum etc., a running cost will increase.

[0003] Then, waste fluid was recently reworked and the attempt in which a penetrant remover would be reused also came out. The example is called sedimentation method and drawing 7 shows the outline configuration of the waste fluid regenerative apparatus used with a sedimentation method. As shown in drawing 7, the conventional waste fluid regenerative apparatus 51 is equipped with the container 53 which collects the washing waste fluid (waste fluid) 52, the pars-basilaris-ossis-occipitalis discharge piping 54 is connected to the bottom wall of this container 53, and the flank discharge piping 55 is connected to the side attachment wall of a container 53. Furthermore, the container 56 for concentration waste fluid recycling is arranged in the outlet lower part of the pars-basilaris-ossis-occipitalis discharge piping 54 among these discharge piping 54 and 55, and the container 57 for playback penetrant remover recycling is arranged in the outlet lower part of the flank discharge piping 55. Moreover, the closing motion bulb 58 is connected to the path of one pars-basilaris-ossis-occipitalis discharge piping 54, the closing motion bulb 59 is connected to the upstream, and the filter 60 is arranged in the path of the flank discharge piping 55 of another side by the downstream.

[0004] Thus, the ink pigment 61 is made to sediment at the pars basilaris ossis occipitalis of a container 53 in the constituted waste fluid regenerative apparatus 51 by accumulating the waste fluid 52 after washing the blanket drum of a printing machine etc. in a container 53, and adding the drugs which promote sedimentation of the ink pigment (it is also only called a pigment) 61 in waste fluid 52. Subsequently, the ink pigments 63 which sedimented, i.e., concentration waste fluid, are collected from the pars-basilaris-ossis-occipitalis discharge piping 54 in the container 56 for concentration waste fluid recycling, and by filtering the supernatant of waste fluid 52 with a filter 60 from the flank discharge piping 55, the ink pigment 61 is removed and it collects in the container 57 for playback penetrant remover recycling. In this way, the obtained penetrant remover 62 will be reused.

[0005] However, sedimentation of the ink pigment 61 was inadequate, and this approach of the purity of a playback penetrant remover is not only insufficient, but since the filter 60 carried out blinding

immediately depending on the combination of ink and a penetrant remover, the technical problem that exchange or cleaning of a filter 60 had to be performed frequently occurred. On the other hand, in the field of electrophotography, the wet-developing method which the electrification toner distributed in the solvent is made to adhere to an electrostatic latent image by electrophoresis, and visualizes it is also adopted partly. In this system, the method which removes electrically the toner particle charged from the waste fluid after cleaning is also proposed (JP,53-10440,A).

[0006] Moreover, by the reference (others [ Kuro-shima ]: Japan Hardcopy'96 collected works, p153 (1996)) in which the same applicant made a society announcement recently, the toner particle stripper similar to the equipment of this invention is shown.

[0007]

[Problem(s) to be Solved by the Invention] However, with above conventional techniques of an official report or techniques of society announcement reference, when conductive water mixes, it is not assumed. For example, although moisture is separated by the above-mentioned society announcement reference using the difference in the specific gravity of carrier liquid and water when water is contained in the collected carrier liquid, it is inevitable big equipment is not only required of this method, but that separation takes long time amount.

[0008] It was originated in view of the above-mentioned technical problem, and this invention is efficient and aims at offering the waste fluid regenerative apparatus and the waste fluid playback approach of a printing machine of having enabled it to aim at reduction of the running cost concerning washing of the abandonment cost of washing waste fluid, or a printing machine, as a result improvement in the productivity of a printing machine as a penetrant remover was able to be reproduced.

[0009]

[Means for Solving the Problem] In order to attain this purpose, the waste fluid regenerative apparatus (claim 1) of the printing machine of this invention The waste fluid reservoir container which is the waste fluid regenerative apparatus which reproduces the ink pigment used with the printing machine, water, and the waste fluid containing a penetrant remover, and stores this waste fluid, It is characterized [ the description and ] by having offered the ground electrode arranged in this waste fluid reservoir container, the metal-electrode plate which can circulate this waste fluid arranged so that predetermined spacing might be separated from this ground electrode and it might counter within this waste fluid reservoir container, and the high-voltage power source which carries out the seal of approval of the electrical potential difference to the above-mentioned metal-electrode plate.

[0010] Moreover, the waste fluid regenerative apparatus (claim 2) of the printing machine of this invention The waste fluid reservoir container which is the waste fluid regenerative apparatus which reproduces the ink pigment used with the printing machine, water, and the waste fluid containing a penetrant remover, and stores this waste fluid, It is installed so that spacing may be separated mutually and it may counter in this waste fluid reservoir container. Two or more metal-electrode plates which can circulate this waste fluid, It is characterized by having offered the ground electrode arranged so that predetermined spacing might be separated at the end of two or more metal-electrode plates with which the above was installed and it might be countered, and the high-voltage power source which carries out the seal of approval of the electrical potential difference to the above-mentioned metal-electrode plate in order to generate electric field between the electrode plates with which the above counters.

[0011] It is desirable that this metal-electrode plate is a wire gauze-like metal-electrode plate (claim 11). Considering as the high voltage is desirable as the electrical potential difference which carries out a seal of approval to two or more above-mentioned metal-electrode plates is isolated from this ground electrode (claim 3). It is desirable that the direction inter-electrode [ with the field strength near this ground electrode generated between the electrode plates with which the above counters ] is set up so that it may become larger than inter-electrode [ far from this ground electrode ] (claim 4).

[0012] Two or more metal-electrode plates make approach most the 1 side in this waste fluid reservoir container this ground electrode and make. this ground electrode -- and -- this -- It is desirable to have been constituted so that the penetrant removers reproduced from the side else [ in this waste fluid reservoir container that has been put in order and arranged towards a side besides in this waste fluid

reservoir container from this 1 side, supplied this waste fluid to the 1 side in this waste fluid reservoir container, and is most separated from this 1 side / this ] might be collected (claim 5).

[0013] It is desirable to be constituted so that the blanket drum washing station which washes the blanket drum of this printing machine may be connected, the waste fluid discharged from this blanket drum washing station may be led near this ground electrode in this waste fluid reservoir container, the penetrant removers and water which were reproduced within this waste fluid reservoir container may be collected and this blanket drum washing station may be supplied (claim 6).

[0014] It is desirable that the sedimentation section which makes the water of this ground electrode by the side of one in this waste fluid reservoir container separated from this waste fluid sediment caudad is prepared (claim 7). Moreover, it is desirable to offer the scraping plate which scratches the ink pigment which condensed and adhered to this ground electrode, and is made to secede from this ground electrode (claim 8). This ground electrode is arranged in an abbreviation horizontal by the lower part in this waste fluid reservoir container, and this metal-electrode plate is arranged above this ground electrode in this waste fluid reservoir container by the abbreviation horizontal. While the 1st recovery hole for collecting the penetrant removers reproduced by the upper part in this waste fluid reservoir container is prepared, it is also desirable that the 2nd recovery hole for collecting the ink pigments and water which were separated into the lower part in this waste fluid reservoir container from the penetrant remover is prepared (claim 9).

[0015] In this case, it is desirable for this metal-electrode plate to counter with this one side attachment wall in this waste fluid reservoir container, and also to be arranged between a side attachment wall and this bridge wall by approaching one side attachment wall in this waste fluid reservoir container, arranging a bridge wall, and being constituted as the waste fluid injection section into which the field divided by this bridge wall and this one side attachment wall throws this waste fluid, (claim 10). It is desirable that it is equipped desirable (claim 11) further withdrawal [ this ground electrode ] to the exterior of this waste fluid reservoir container that this metal-electrode plate is a wire gauze-like metal-electrode plate (claim 12). Moreover, it is also desirable that the take-up motion which rolls round this metal sheet after were constituted by the metal sheet (for example, aluminum foil) which can be rolled round while this ground electrode was wound around the coiled form, having been arranged out of this waste fluid reservoir container, being arranged out of the send equipment which sends out this metal sheet, and this waste fluid reservoir container, being sent out from this send equipment and used within this waste-fluid reservoir container is formed (claim 13).

[0016] Moreover, it is also desirable that the take-up motion which rolls round the thin paper of the shape of a roll which covers the front face of this ground electrode, the send equipment which is arranged out of this waste fluid reservoir container, and sends out this thin paper, and this thin paper after being arranged out of this waste fluid reservoir container, being sent out from this send equipment and used within this waste fluid reservoir container is formed (claim 14). Moreover, while this ground electrode is constituted by the metal bar of the shape of a pivotable cylindrical shape, it is also desirable to have the blade which scratches this ink pigment that this metal-electrode plate was constituted in the shape of a cylinder so that the exterior of this ground electrode might be surrounded, and adhered to the outside surface of this metal bar in slide contact with this metal bar (claim 15).

[0017] Moreover, it is also desirable to have the blade which scratches this ink pigment that this ground electrode was constituted by the pivotable metal disk, and adhered to the outside surface of this metal disk in slide contact with this metal disk (claim 16). Moreover, it is also desirable to have the driving gear which this ground electrode is constituted by the endless metal sheet, and carries out the rotation drive of the metal sheet endless [ this ], and the blade which scratches this ink pigment that adhered to the outside surface of this metal sheet in slide contact with the metal sheet endless [ this ] (claim 17).

[0018] Furthermore, it is also desirable that this ground electrode is constituted with the metal of the shape of a conductive projection or an eye of a network (claim 18). In this case, it is desirable that the ultrasonic rocking equipment which makes the ink pigment which excited this ground electrode and adhered to this ground electrode remelt in a penetrant remover is equipped (claim 19).

[0019] Moreover, the waste fluid playback approach (claim 20) of the printing machine of this invention

Are the waste fluid playback approach which reproduces the waste fluid containing the ink pigment, the water, and the penetrant remover which were used with the printing machine, generate electrostatic field in this waste fluid, and the electrophoresis of this ink pigment by this electrostatic field is used. The electrostatic condensation of above-mentioned water and an above-mentioned ink pigment is carried out from this waste fluid, and it is characterized by making this waste fluid divide into this penetrant remover, the above-mentioned water, and an ink pigment.

[0020]

[Embodiment of the Invention] Hereafter, a drawing explains the gestalt of operation of this invention. First, when the 1st operation gestalt of this invention is explained, drawing 1 - drawing 6 are what shows the waste fluid regenerative apparatus and the waste fluid playback approach of a printing machine as the 1st operation gestalt of this invention. Drawing of longitudinal section of the waste fluid reservoir container which drawing 1 and drawing 2 show the configuration of this equipment, a cross-sectional view, The mimetic diagram drawing 3 explains the principle of this equipment and this approach to be in order of (a) - (c), Drawing where drawing 4 explains the configuration of this equipment, the system configuration Fig. showing the condition that drawing 5 built this equipment into the washing station, and drawing 6 are drawings showing an example of the removal technique of the ink pigment which adhered to the ground electrode plate in this equipment.

[0021] First, the waste fluid playback principle of this waste fluid regenerative apparatus and this waste fluid playback approach is explained. In playback of the ink pigment 61, water 9, and the waste fluid 11 containing three components of a penetrant remover (insulating thing) 62, this waste fluid playback principle carries out the electrostatic condensation of the water 9 while it generates electrostatic field and carries out electrophoresis of the ink pigment 61 in waste fluid into waste fluid 11, and it separates the ink pigment 61, water 9, and a penetrant remover 62.

[0022] That is, although water 9, the ink pigment 61, and the penetrant remover 62 are intermingled in the waste fluid 11 supplied in the container as shown in drawing 3 (a) The electrode plates 3 and 4 are installed in the side 1 in such waste fluid 11, and else, the electrode plate 3 carries out a touch-down ground, and it is a ground electrode (here). Since a ground electrode is tabular, if it supposes hereafter that it is also called a ground electrode plate and the seal of approval of the high voltage is carried out to the electrode plate 4, the electrode plate 4 will become + pole, the electrode plate 3 will become - pole, and electric field will occur between the electrode plate 3 and 4. By this, as shown in drawing 3 (b), the electrophoresis of the ink pigment 61 in waste fluid 11 and electrostatic condensation of water 9 start, and water 9 and the ink pigment 61 move separately, respectively, and are separated.

[0023] As a reaction in electric field follows for progressing (that is, the condition of generating electrolysis being continued for a long time), it dissociates completely and water 9 and the ink pigment 61 are shown in drawing 3 (c), water 9 is condensed to a group and sediments at the pars basilaris ossis occipitalis with gravity. Moreover, the ink pigment 61 of + charge adheres to the ground electrode plate 3 which is - pole. Water 9 and the ink pigment 61 dissociate from a penetrant remover 62 completely by this, and the beautiful penetrant remover 62 (namely, washing regenerant 26) is obtained.

[0024] As drawing 4 (a) is the mimetic diagram which materialized further the equipment configuration for performing waste fluid playback using such a principle and it is shown in drawing 4 (a) The tabular ground electrode plate 20 is installed so that a side face may be met at the 1 side in the waste fluid reservoir container (only henceforth a container) 2. At the point which only distance A separated from the ground electrode plate 20 in a container 2, the 1st impression electrode plate (It is also only hereafter called an electrode plate) 30a is installed in parallel with the ground electrode plate 20, and 2nd impression electrode plate 30b is installed in the point which only distance B separated from this electrode plate 30a in a container 2 further in parallel to the ground electrode plate 20 and electrode plate 30a.

[0025] Therefore, the inside of a container 2 is two electrode plates 30a and 30b (in not distinguishing each electrode plate). 30 -- being shown, although divided into three fields, the 1st field (it is a waste fluid injection layer and is also called the 1st layer) a, the 2nd field (it is a processing layer and is also called the 2nd layer) b, and the 3rd field (it is a processed layer and is also called the 3rd layer) c, toward

the side else from the 1 side Since the electrode plates 30a and 30b are wire gauze-like metal-electrode plates made with the reticulated metal plate (for example, wire gauze of 200 meshes), circulation of waste fluid 11 is attained between each field of a, b, and c.

[0026] Moreover, the ground electrode plate 20 for condensation for condensing the ink pigment 61 is connected to the ground 8. Moreover, the electrode plates 30a and 30b are connected to the high-voltage power source (only henceforth a power source) 7 through voltage overloads (electric resistance) 7a and 7b which are mutually different so that the seal of approval of the respectively separate electrical potential difference can be carried out. And in the container 2, the beautiful penetrant remover 62 is supplied first. Moreover, the high voltage of 8kV (kilovolt) extent is impressed to 1st impression electrode plate 30a, and the larger high voltage of about 10kV than it is impressed to 2nd impression electrode plate 30b.

[0027] Thereby, in the 1st field a, the 8kV potential difference occurs between the migration ground electrode plate 20 and 1st impression electrode plate 30a, the ink pigment 61 in waste fluid 11 is attracted by the ground electrode plate 20 according to this potential difference, and water 9 is condensed and sediments at the pars basilaris ossis occipitalis. However, perfect separation is difficult only in this 1st field a. On the other hand, the waste fluid 11 with which some ink pigments 61 remained passes 1st impression electrode plate 30a of a wire gauze, and moves to the 2nd field b. In this 2nd field b, since the 2kV potential difference has occurred between 1st impression electrode plate 30a and 2nd impression electrode plate 30b, some ink pigments 61 which remained in waste fluid 11 are condensed in the direction of 1st impression electrode plate 30a, and are condensed from here in the ground electrode plate 20 direction where the potential difference is still larger.

[0028] Consequently, the ink pigment 61 is altogether condensed and adsorbed by the ground electrode plate 20, and water 9 sediments at the pars basilaris ossis occipitalis in a container 2. And water 9 and the ink pigments 61 are collected in the 1st [ of container 2 right-hand side ] field a, and only the penetrant remover 62 which became beautiful is stored in the 3rd field (processed layer) c of container 2 left-hand side. The penetrant remover 62 in this field c can be collected and reused.

[0029] However, electric field become it weak that electrical-potential-difference inclination (potential difference inclination) is not much loose, and it is necessary for migration to the electrode by the side of the low voltage of the ink pigment 61 and water 9 to seldom enlarge fully giving the mutual potential difference of an electrode plate, since condensation becomes slow and these separation becomes difficult, and mutual distance of an electrode plate. Moreover, in order to condense and adsorb the ink pigment 61 certainly at the ground electrode plate 20, what like strengthens electric field for clearly near the ground electrode plate 20 (electrical-potential-difference inclination is made sudden) is needed.

[0030] That is, distance between two-electrodes plate 30a and 30b is set to comparatively short B as mentioned above. When the electrical potential difference of 10kV is impressed to 1st impression electrode plate 30a at 8kV and 2nd impression electrode plate 30b, respectively, as the potential difference of 1st impression electrode plate 30a and 2nd impression electrode plate 30b is set to 2kV and a continuous line shows to drawing 4 (b) Since it becomes sufficient electrical-potential-difference inclination and electric field moreover become strong more clearly [ the direction nearer to the ground electrode plate 20 ], separation of the ink pigment 61 and water 9 can be ensured.

[0031] However, 3rd impression electrode plate 30c is prepared in [the left end in drawing 4 (a) where the ground electrode plate 20 is opposite] a side besides in a container 2. To 1st impression electrode plate 30a at 8kV and 2nd impression electrode plate 30b For example, 9kV, When the electrical potential difference of 10kV is impressed to 3rd impression electrode plate 30c, respectively, Come out and electric field become weak. a broken line shows electrical-potential-difference inclination to drawing 4 (b) -- as -- the 2nd field b and the 3rd field c -- \*\* -- Moreover, as for the 2nd field b, perfect separation becomes impossible, in order that there may be few the differences, the ink pigment 61 can draw near to the electric field which act in the 3rd field c and the ink pigment 61 may move also into the 3rd field c, although electric field are stronger than the 3rd field c.

[0032] Although each operation gestalt of this invention is constituted from such a viewpoint, the waste fluid-regenerative apparatus of the printing machine concerning the 1st operation gestalt is constituted as

shown in drawing 1 and drawing 2. That is, as shown in drawing 1 and drawing 2, in this regenerative apparatus 15, the ground electrode plate 20 for ink pigment condensation is arranged at 1 side in a container 2 (drawing 1 Nakamigi edge). Between the ground electrode plate 20 and the wall of a container 2, an insulator 21 is infixed, and the upper part of the ground electrode plate 20 is covered with the insulator 22, and short circuit generating between the ground electrode plate 20 and other electrode plates is prevented.

[0033] In the container 2, 1st impression electrode plate 30a is installed in the location to some extent near the ground electrode plate 20 in parallel with the ground electrode plate 20, and 2nd impression electrode plate 30b is installed in the location to some extent still nearer to electrode plate 30a in a container 2 in parallel with the ground electrode plate 20 and electrode plate 30a. the 1- which the electrode plates 30a and 30b are wire gauze-like metal-electrode plates made at the wire gauze of 200 meshes, and was divided with the electrode plates 30a and 30b -- circulation of waste fluid 11 is attained between each 3rd field a and b and c. Moreover, it is covered with Insulators 31a and 31b by the upper part of the impression electrode plates 30a and 30b, and short circuit generating between each electrode plate is prevented.

[0034] And the power source 7 is connected to the impression electrode plates 30a and 30b through mutually different voltage overloads 7a and 7b so that an electrical potential difference different, respectively may be impressed. Of course, the electric field from which an electrical potential difference high enough is impressed, 2nd impression electrode plate 30b is impressed, and an electrical potential difference higher than 1st impression electrode plate 30a moreover produces it by this electrical-potential-difference impression are set to the impression electrode plates 30a and 30b so that the 1st field a may become strong clearly from the 2nd field b (with namely, clear difference).

[0035] Moreover, in order to collect the water 9 which the lower part of the 1st field a in a container 2 functioned as tank (sedimentation section) 2a to which the water 9 condensed and separated sediments, and sedimented here, the recovery hole 36 is formed in the lower part of a container 2. The piping 38 for recovery is connected to this recovery hole 36 through the bulb 37 for recovery. In addition, since a penetrant remover 62 is insulation, it is unnecessary, but since water 9 is conductivity, the polar zone (lower part of the ground electrode plate 20 and electrode plate 30a) in sedimentation section (lower part of 1st field a) 2a to which water 9 sediments is covered with insulators 23 and 33.

[0036] The recovery hole 27 which collects penetrant removers 62 is formed in the upper part in the 3rd field c in which the penetrant remover 62 which the ink pigment 61 and water 9 dissociated, and was reproduced finely on the other hand is stored. The piping 29 for recovery is connected to this recovery hole 27 through the bulb 28 for recovery. The waste fluid regenerative apparatus of the printing machine as the 1st operation gestalt of this invention Supplying the beautiful penetrant remover 62 in the container 2 first, and making waste fluid 11 flow in this container 2, since it is constituted as mentioned above An electrical potential difference (for example, 8kV) high enough is impressed to 1st impression electrode plate 30a, and an electrical potential difference (for example, 10kV) still higher than 1st impression electrode plate 30a is impressed to 2nd impression electrode plate 30b. By this, electric field strong against the 1st field a occur, and although it is weaker than the 1st field a in the 2nd field b, to it, to some extent strong electric field occur.

[0037] That is, in the 1st field a, according to the big potential difference (8kV) between the migration ground electrode plate 20 and 1st impression electrode plate 30a, the ink pigment 61 in waste fluid 11 is attracted by the ground electrode plate 20, and water 9 is condensed and sediments at the pars basilaris ossis occipitalis. Although the waste fluid 11 with which some ink pigments 61 remained passes 1st impression electrode plate 30a of a wire gauze and moves to the 2nd field b Since potential difference (2kV) sufficient between 1st impression electrode plate 30a and 2nd impression electrode plate 30b occurs in this 2nd field b, some ink pigments 61 which remained in waste fluid 11 It condenses in the direction of 1st impression electrode plate 30a, and condenses from here in the ground electrode plate 20 direction where the potential difference is still larger.

[0038] Consequently, the ink pigment 61 is altogether condensed and adsorbed by the ground electrode plate 20, and water 9 sediments at the pars basilaris ossis occipitalis in the 1st [ of the right-hand side in



a container 2 ] field a. Only the penetrant remover 62 which became beautiful is stored in the 3rd field (processed field) c of container 2 left-hand side. The water 9 which sedimented to pars-basilaris-occipitalis (tank) 2a in the 1st field a here The penetrant remover 62 which were collected from the recovery hole 36 outside through the piping 38 for recovery, and was finely reproduced by opening the bulb 37 for recovery By opening the bulb 28 for recovery, it is collected and reused outside through the bulb 28 for recovery from the recovery hole 27 prepared in the upper part in the 3rd field c.

[0039] Thus, in the system in which three components of the ink pigment 61, the insulating penetrant remover 62, and conductive water 9 were intermingled, single equipment can separate these three components and, moreover, such separation can be performed comparatively in a short time. By the way, when the waste fluid regenerative apparatus 15 concerning this operation gestalt is constituted as a system built into the washing station of an actual printing machine, it comes to be shown in drawing 5.

[0040] The washing roller 71 is pushed against the blanket drum 90 under rotation shown in the left-hand side in drawing 5, and it is made to spray the penetrant remover 62 supplied from this regenerative apparatus 15 by the nozzle 75 for penetrant removers from a lower part in a washing station 70, as shown in drawing 5. By this, the penetrant remover 62 injected from the nozzle 75 washes the blanket drum 90 through a blade 74 and the washing roller 71.

[0041] The waste fluid 11 after washing is formed caudad, and a certain recovery tank 78 is covered with it, and it is transported to a regenerative apparatus 15 for piping 76. In addition, although 72 are the nozzle for desiccation of a blanket drum among drawing 5 and 73 is an air motor, these are not the necessities of this invention. The regenerative apparatus 15 shown in the drawing 5 Nakamigi side is a waste fluid regenerative apparatus of the printing machine concerning this above-mentioned operation gestalt, and the same sign as drawing 1 and drawing 2 shows the same thing, and does not explain it to a detail.

[0042] The waste fluid 11 from a washing station 70 separates three components from the waste fluid 11 with which it was sent to the 1st field a in a container 2 (waste fluid supply field) from the supply pipe 25, and three components of the ink pigment 61, the insulating penetrant remover 62, and conductive water 9 were intermingled as mentioned above in the regenerative apparatus 15 through piping 76 to the piping 24. And the washing regenerant 26 reproduced with the regenerative apparatus 15 is sucked up through the tubing 29 for recovery from the recovery hole 27 prepared in the 3rd field (processed layer) c of a container 2, and a washing station 70 is for [ nozzle 75 HE for penetrant removers ] \*\*\*\*\* (ed) as a penetrant remover 62.

[0043] On the other hand, as for the water 9 which sedimented down the 1st field (waste fluid supply field) a, a washing station 70 is for [ nozzle 75 HE for penetrant removers ] \*\*\*\*\* (ed) like regenerant 26 through the recovery hole 36 and piping 38. And the recycled water 9 and regenerant 26 (penetrant remover 62) which were sent to the washing station 70 are sent to the penetrant remover injection nozzle 75, are injected by the washing roller 71 from a nozzle 75, and are used for washing of the blanket drum 90.

[0044] Henceforth, the blanket drum by the penetrant remover which the continuous washing waste fluid reproduced and reproduced can be washed by repeating this cycle. Thus, it can be efficient, playback of a penetrant remover 62 can be performed now, the abandonment cost of the washing waste fluid 11 can be reduced, and since the running cost concerning washing of a printing machine can be reduced as a result, improvement in the productivity of a printing machine can be aimed at.

[0045] In addition, about the ink pigment 61 with which the ground electrode plate 20 condensed and adsorbed by electrostatic migration, it is necessary to remove from the ground electrode plate 20. As this cure against removal, although there are various approaches, technique as shown, for example in drawing 6 can be considered. In addition, in drawing 6, the same sign as drawing 1 and drawing 2 shows the same thing, and explanation is omitted.

[0046] As shown in drawing 6, this technique is what is depended on the so-called scraping fixture. A scraping fixture Slide bar 50a which drives by a cylinder, a motor, etc. which are not illustrated and is slid along the front face of the ground electrode plate 20, It consists of a scraping plate 50 fixed at the tip of this slide bar 50a, and it is failed caudad to scratch the ink pigment 61 adhering to the front face of the

ground electrode plate 20 by operating slide bar 50a and making it move along the front face of the ground electrode plate 20 of the scraping plate 50.

[0047] In addition, it is made to make the scraping plate 50 stand by during regeneration in the upper part. Washing waste fluid can be regenerated without this exchanging electrodes. By the way, since the waste fluid playback test was performed about the regenerative apparatus of this operation gestalt, this is explained.

[0048] About equipment conditions, the capacity (liquid storage) of a container 2 First, 600 cc, The inter-electrode distance (distance A shown in drawing 4 ) of the ground electrode plate 20 and 1st impression electrode plate 30a 20mm, Inter-electrode distance (distance C shown in drawing 4 ) of 20mm, 2nd impression electrode plate 30b, and the other end of a container 2 is set to 20mm for the inter-electrode distance (distance B shown in drawing 4 ) of 1st impression electrode plate 30a and 2nd impression electrode plate 30b. About voltage overload conditions, 1st impression electrode plate 30a sets 8kV and 2nd impression electrode plate 30b to 10kV. As waste fluid sheet ink [, for example, yes, -- Echo MZ (Toyo Ink make), SERUBOY (Tokyo Printing Ink Mfg. make), and Geos-GN(Dainippon Ink make)] -- using -- as a penetrant remover -- auto -- clean (Nikken Chemicals make), BURAKURINS (product made from knickerbockers), and a print cleaner (Toyo Ink make) are used. And 20 more% of water was added to the solution which diluted ink with the penetrant remover to 1%, simulation waste fluid was made, 100 cc of this simulation waste fluid was poured into the 1st field a of equipment, and the playback test was performed.

[0049] The test result in the above conditions was as follows.

\*\* First, water dissociated and sedimented and ink adhered to the ground electrode.

\*\* When collecting the clean penetrant removers in the 3rd field c, there was no waste fluid flow to the 3rd field c from the 2nd field b.

\*\* The time amount which playback took was 400 - 600 seconds.

\*\* Although the time amount which playback takes was shortened to one fourth when each inter-electrode distance was shortened with 20 to 10mm, a flow of the waste fluid between each field became difficult, and the fault from which the ink removal adhering to the ground electrode plate 20 becomes difficult occurred.

[0050] Although the time amount which playback takes with the distance between electrode plates (distance of each field) may be changed from this test result or the ink flow conditions between layers may differ, it set on all conditions, water and ink were separated and condensed, and it became clear that a beautiful penetrant remover is recoverable. Washing waste fluid is separable into water and an ink pigment, and a penetrant remover from this completely by setting up the fitness conditions (inter-electrode distance, capacity of each field, potential difference allocation, etc.) according to the capacity of a container.

[0051] By the way, although it can fail to scratch caudad the ink pigment 61 which adhered to the front face of the ground electrode plate 20 with the scraping plate 50 with the above-mentioned 1st operation gestalt, the layer lower part falls and the ink pigment which it failed to scratch accumulates on the interior, such as a storage tank of water 9. For this reason, periodically, it is necessary to clean up so that the ink pigment 61 in a storage reservoir may remove.

[0052] Moreover, if the scraping stroke and its removal process of equipping the equipment which removes the ink pigment 61 from the ground electrode plate 20 of scraping plate 50 grade, and an ink pigment are also doubled, it is possible that the costs which removal of the separated ink pigment takes, and time amount become a burden. Then, it was efficient, the penetrant remover could be reproduced and each following operation gestalten were originated as a thing which enables it to aim at reduction of the equipment costs and the running cost concerning removal of the ink pigment moreover made to separate, and abandonment, as a result improvement in the productivity of a printing machine.

[0053] First, when the 2nd operation gestalt of this invention is explained, drawing 7 - drawing 9 are drawings showing the waste fluid regenerative apparatus and the waste fluid playback approach of a printing machine as the 2nd operation gestalt of this invention, and the typical sectional view which looked at drawing 7 from [ of the typical top view of the waste fluid reservoir container and its waste



fluid reservoir container ] the side face, drawing 8 , and drawing 9 are the typical sectional views explaining the actuation. Among drawing 7 - drawing 9 , drawing 1 - drawing 6 , and a same sign show the same thing, and omit a part of explanation about these.

[0054] To the ground electrode plate (ground electrode) 20 and the impression electrode plate 30 being set up in the direction of a vertical in the waste fluid reservoir container 2, with the waste fluid regenerative apparatus of the printing machine concerning this operation gestalt, as shown in drawing 7 (a) and (b), with the waste fluid regenerative apparatus of the 1st operation gestalt, the tabular ground electrode plate (ground electrode) 20 and the tabular impression electrode plate 30 are arranged horizontally in the waste fluid reservoir container 2. Moreover, it has two impression electrode plates 30 like the 1st operation gestalt. And the ground electrode plate 20 is a voltage overload (it is the same as that of the 1st operation gestalt to connect with the high-voltage power source 7 through 7a and 7b.) which is connected to a ground 8, and is mutually different as for the electrode plates 30a and 30b so that the seal of approval of the respectively separate electrical potential difference can be carried out.

[0055] If it furthermore explains, the ground electrode plate 20 is arranged in an abbreviation horizontal by the lower part in the waste fluid reservoir container 2, and the metal-electrode plates 30a and 30b are arranged above the ground electrode plate 20 in a container 2 by the abbreviation horizontal. However, 1 side-attachment-wall 2b in a container 2 is approached, the bridge wall 19 is arranged, and the field divided with this bridge wall 19 and 1 side-attachment-wall 2b consists of these operation gestalten as waste fluid injection section 2A which throws in waste fluid 11. And the metal-electrode plates 30a and 30b counter this bridge wall 19 and 1 side-attachment-wall 2b in a container 2, and also are arranged through Insulators 31c and 31d, respectively between side-attachment-wall 2c. In addition, the ground electrode plate 20 is formed so that the whole pars basilaris ossis occipitalis in a container 2 may be covered.

[0056] The inside of a container 2 therefore, with the electrode plates 30a and 30b Although divided into three fields, the 1st field (it is also called the 1st layer or an injection layer) a, the 2nd field (it is also called the 2nd layer or a processing layer) b, and the 3rd field (it is also called the 3rd layer or a processed layer) c, toward the upper part from the lower part Since the electrode plates 30a and 30b consist of wire gauze-like metal-electrode plates like the 1st operation gestalt, circulation of waste fluid 11 is attained between each field of a, b, and c. Moreover, waste fluid injection section 2A by the side of 1 side-attachment-wall 2b in a container 2 constitutes a part of 1st field (the 1st layer) a.

[0057] The 1st recovery hole 27 for collecting the reproduced penetrant removers 62 is formed in the field (the 3rd layer) c of the upper part in a container 2, and the 2nd recovery hole 36 for collecting the ink pigments 61 and water 9 which were separated from the penetrant remover 62 is formed in the field (the 1st layer) a of the lower part in a container 2. Each recovery holes 27 and 36 are constituted like the 1st operation gestalt.

[0058] Since the waste fluid regenerative apparatus of the printing machine as the 2nd operation gestalt of this invention is constituted as mentioned above, as shown in drawing 8 , it throws in the washing waste fluid 11 in a container 2 from waste fluid injection section 2A, puts in waste fluid 11 to the location shown by two-dot chain line e, and supplies waste fluid 11 in a container 2 from waste fluid injection section 2A further. The supplied waste fluid goes into the 2nd field (processing layer) b along the direction of an arrow head Y.

[0059] Here, waste fluid 11 is impressed with the impression electrode plates 30a and 30b, and is divided into water 9, the ink pigment 61, and a penetrant remover 62. The penetrant remover 62 which was separated and was reproduced finely is stored by the 3rd field (processed layer) layer c of the container 2 upper part. Since it is prepared at this time so that waste fluid injection section 2A may lead to the 1st field (injection layer) a, separation of the penetrant remover 62 from waste fluid 11, water 9, and the ink pigment 61 can be performed more smoothly.

[0060] On the other hand, the separated water 9 sediments in the container 2 lower part, and is stored by the 1st field a of the right above section of the ground electrode 20. Here, this water 9 very thing serves as a ground, the ink pigment 61 is made to condense and adhere near the interface of water 9, and as a result, the separated ink pigment 61 will adhere to the front face of water 9, and will be stored. It goes up

to the location which only the part which supplied waste fluid 11 increase-izes the penetrant remover 62 in a container 2, for example, shows to drawing 8 by two-dot chain line f. Consequently, the penetrant remover reproduced finely is recoverable from a pipe 29 through the recovery hole 27 to the bulb 28.

[0061] Thus, if recovery of the penetrant remover 62 by separation to the water 9 of waste fluid 11, the ink pigment 61, and a penetrant remover 62 is continued and it passes for a long period of time, as shown in drawing 9, a lot of water 9 will be stored by the upper part of the ground electrode 20.

Moreover, the separated ink pigment 61 has adhered to the front face of this water 9 in large quantities. Thus, if it is used for a long period of time and the ink pigment 61 and water 9 store, it is necessary to carry out the cast away of these from a container 2, and water 9 and the ink pigments 61 will be collected from the recovery hole 36 out of a container 2 to coincidence through a bulb 37 and a pipe 38, and it will be made to carry out the cast away of these with this operation gestalt.

[0062] Thus, since the ink pigment 61 which was separated from waste fluid 11 and stored can be easily discarded with water 9, the equipment about abandonment becomes unnecessary, and moreover, it can be exhausted in a short time and can also make operation cost cheap. Moreover, in the waste fluid playback by this method, since the ink pigment 61 and water 9 which were separated do not dissolve in a penetrant remover 62 even if they carry out prolonged neglect (one years or more), the cautions time amount about abandonment of the ink pigment 61 becomes almost unnecessary.

[0063] Next, when the 3rd operation gestalt of this invention is explained, drawing 10 is the typical sectional view showing the waste fluid regenerative apparatus of the printing machine as the 3rd operation gestalt of this invention. Among drawing 10, drawing 1 - drawing 9, and a same sign show the same thing, and omit a part of explanation about these. As shown in drawing 10, in the thing of the 2nd operation gestalt, the impression electrode plate is set only to lot (one sheet) 30a, and other configurations consist of these operation gestalten like the 2nd operation gestalt.

[0064] The waste fluid regenerative apparatus of the printing machine as the 3rd operation gestalt of this invention Since it is constituted as mentioned above, if it compares when an impression electrode is set to 30a and 30b 2 sets (two sheets) like the 2nd operation gestalt The effectiveness as an electrostatic filter falls a little, and although the operation divided into water 9, the ink pigment 61, and a penetrant remover 62 becomes weaker, waste fluid 11 A certain amount of separation effectiveness is still acquired, and sufficient separation can be especially performed in a short time depending on the class (class of a penetrant remover and ink pigment) of washing waste fluid.

[0065] Therefore, like this operation gestalt, even if it simplifies a configuration more, waste fluid is fully reproducible [ by making an impression electrode only into a lot, ] depending on the conditions and operating condition (need regenerative cycle) of washing waste fluid. In addition, in what turned and arranged the electrode plate in the direction of a vertical like the 1st operation gestalt, the configuration which makes an impression electrode plate only a lot (one sheet) is also considered like this.

[0066] Next, when the 4th operation gestalt of this invention is explained, drawing 11 - drawing 13 are drawings showing the waste fluid regenerative apparatus and the waste fluid playback approach of a printing machine as the 4th operation gestalt of this invention, and drawing 11, the typical sectional view in which drawing 12 shows the waste fluid regenerative apparatus, and drawing 13 are the typical sectional views showing the modification of the waste fluid regenerative apparatus. Among drawing 11 - drawing 13, drawing 1 - drawing 10, and a same sign show the same thing, and omit a part of explanation about these.

[0067] The waste fluid regenerative apparatus of this operation gestalt is constituted withdrawal out of the container 2 in the ground electrode 20 arranged at the lower part of a container 2 in the thing of the 2nd operation gestalt. That is, as shown in drawing 11 and drawing 12, opening 2B is prepared in the lower part of a container 2, the conductive adapter (ground electrode fixed adapter) 100 which can be freely detached and attached from the outside of a container 2 is offered on this opening 2B, and the ground electrode 20 is fixed to this conductive adapter 100 in that end.

[0068] And if it will be in the busy condition of this equipment and the conductive adapter 100 is removed from opening 2B as it is shown in drawing 12, if the ground electrode 20 is made to advance into a container 2 from opening 2B and opening 2B is equipped with the conductive adapter 100, as

shown in drawing 11 , the ground electrode 20 can be pulled out out of a container 2. In addition, if opening 2B is equipped with the conductive adapter 100, by the conductive adapter 100, the seal of the opening 2B will be carried out and a liquid spill will carry out it from the inside of a container 2.

Moreover, the ground electrode 20 is connected to the ground 8 through the conductive adapter 100.

[0069] Since it is constituted as mentioned above, the waste fluid regenerative apparatus of the printing machine as the 4th operation gestalt of this invention can carry out the cast away of the ink pigment 61 which pulled out the ground electrode 20 out of the container 2, and deposited it on the ground electrode 20 as shown in drawing 11 , when carrying out the cast away of the ink pigment 61. Thus, since the ink pigment 61 will be deposited on the ground electrode 20 if the liquid in a container 2 is removed as the ground electrode 20 is level, if the ground electrode 20 is pulled out out of a container 2, the cast away of the ink pigment 61 can be carried out easily.

[0070] Therefore, if water 9 and the ink pigment 61 store in the ground electrode 20 upper part, using equipment for a long time, the penetrant removers 62 in a container 2 are collected as much as possible from the recovery hole 27, as shown in drawing 12 after that, the ground electrode fixed adapter 100 will be made to slide, and the ground electrode 20 will be pulled out out of a container 2. In connection with this, the cast away of the water 9 which was being stored in the ground electrode 20 upper part, the ink pigment 61, and some penetrant remover is carried out out of a container.

[0071] In addition, after discharging the liquid in a container 2 outside beforehand, the ground electrode fixed adapter 100 may be slid (removal). Moreover, cleaning of the ground electrode 20 etc. may be performed in the place which pulled out the ground electrode 20 out of the container 2. According to this method, discarding the separated ink pigment 61 out of a container 2 can also do an equipment configuration for a comparatively simple thing easily. Furthermore, in order to pull out the ground electrode 20 out of a container 2, there is also an advantage which can also perform cleaning in the body container 2 easily.

[0072] By the way, the method which pulls out such a ground electrode 20 out of a container 2, and discards the ink pigment 61 can apply the impression electrode plate 30 other than what made the impression electrode plate 30 the lot (one sheet) (the 3rd operation gestalt) also to what was made into two or more sets (for example, two sheets) (the 2nd operation gestalt), as are shown in drawing 11 and drawing 12 , and shown in drawing 13 . Moreover, you may enable it to remove the ink pigment 61 with which the ground electrode 20 removed the ground electrode 20, and adhered to the ground electrode 20 as up withdrawal in the ground electrode 20 like the 1st operation gestalt in what has been arranged towards the direction of a vertical. Thus, selection of the combination number of an impression electrode plate and the installation method of a ground electrode can be performed free.

[0073] Next, when the 5th operation gestalt of this invention is explained, drawing 14 is the typical sectional view showing the waste fluid regenerative apparatus and the waste fluid playback approach of a printing machine as the 5th operation gestalt of this invention. Among drawing 14 , drawing 1 - drawing 13 , and a same sign show the same thing, and omit a part of explanation about these.

[0074] As shown in drawing 14 , in the thing of the 1st operation gestalt, the aluminum foil 40 is used as a ground electrode, and it consists of these operation gestalten so that the ink pigment 61 may be made to adhere to both the front faces of this aluminum foil 40. Especially, make the new aluminum foil 40 into a coiled form, equip the send equipment 41 besides a container 2 with it, carry out the guide roll 43 in a container 2, and the guide roll 44 besides a container 2 to a guide, and the aluminum foil 40 is made to \*\*\*\*, as shown in drawing 14 , and it consists of this equipment so that it may roll round with the take-up motion 42 besides a container 2. Moreover, the ground electrode 8 is connected to the aluminum foil 40 through slide contact terminal 8a.

[0075] In addition, send equipment 41 equips the reel around which the coiled form aluminum foil 40 was wound, and while it will send out if the reel which can wind the aluminum foil 40 is equipped and the reel by the side of a take-up motion 42 is rotated with a motor or hand control, and the reel by the side of equipment 41 rotates according to this, aluminum foil 40 GA push appearance of the take-up motion 42 is carried out.

[0076] Since the waste fluid regenerative apparatus of the printing machine as the 5th operation gestalt

of this invention is constituted as mentioned above, the aluminum foil 40 was charged with the ground electrode 8, and is flooded with the waste fluid 11 in a container 2, and the ink pigment 61 in the waste fluid 11 in a container 2 adheres to the front face (both sides wrong side out) of the aluminum foil 40. It is rolled round by the Maki KI picking equipment 42 of another side, after the new aluminum foil 40 enters into the waste fluid 11 in a container 2 and adheres the ink pigment 61.

[0077] After making it always move at slow speed and carrying out a fixed time amount halt, the method which moves in a predetermined cycle may be used for migration of the aluminum foil 40 in this case. Thus, since adhesion recovery is carried out with the aluminum foil 40, the ink pigment 61 does not adhere and deposit the ink pigment 61 separated from the penetrant remover 62 in a container 2, and it can prevent the contamination in a container 2.

[0078] Moreover, since the collected ink pigment 61 can be discarded together with the aluminum foil 40, it can also prevent contamination of equipment or an environment. And the removal equipment configuration by this method is compact, and its manufacturing cost is also cheap. Moreover, since commercial aluminum FOIRU etc. is sufficient as the aluminum foil 40, it has the advantage which can also make a running cost comparatively cheap.

[0079] In addition, it is made to interlock delivery equipment 41 and a take-up motion 42, or you may make it drive a reel as well as [ equipment / 41 / delivery ] a take-up motion 42 by a motor etc. so that excessive tension may not join the aluminum foil 40. Of course, it may replace with the aluminum foil 40 and other conductive metal thin films (metal sheet) may be used.

[0080] Next, when the 6th operation gestalt of this invention is explained, drawing 15 is the typical sectional view showing the waste fluid regenerative apparatus and the waste fluid playback approach of a printing machine as the 6th operation gestalt of this invention. Among drawing 15, drawing 1 - drawing 14, and a same sign show the same thing, and omit a part of explanation about these. As shown in drawing 15, the ink pigment 61 is made to adhere to the front face of the thin paper 94, and it constitutes from this operation gestalt so that the ink pigment 61 may be removed with the thin paper 94.

[0081] That is, by this method, the ground electrode plate 20 is set in a container 2, and the thin paper 94 is pressed against both the front faces of this ground electrode 20 through two or more guide idlers 93. Moreover, as shown in drawing 15, this thin paper 94 makes new thin paper 94 a coiled form (the shape of a roll), equips the send equipment 91 besides a container 2 with it, is made to \*\*\*\* by making a guide the guide idler 93 in a container 2, and it is constituted so that it may roll round with the take-up motion 92 besides a container 2. Since the thin paper 94 sent out from delivery equipment 91 is pushed against the ground electrode plate 20 in the liquid in a container 2, it is charged.

[0082] Since the waste fluid regenerative apparatus of the printing machine as the 6th operation gestalt of this invention is constituted as mentioned above, the ink pigment 61 adheres to the front face of the thin paper 94 in the liquid in a container 2. If the thin paper 94 to which the ink pigment 61 adhered is rolled round with the take-up motion 92 of another side, the unnecessary ink pigment 61 is easily recoverable with the thin paper 94. And the thin paper 94 which adhered and was rolled round take-up motion 92 can discard the ink pigment 61 as it is.

[0083] Here, jogging migration may be carried out and the thin paper 94 within the solution layer in a container 2 may always repeat migration and a halt in a predetermined cycle. Thus, adhesion of the ink pigment 61 into a container 2 and the reproduced contamination of a penetrant remover can be easily prevented by considering as the ink pigment stripper which made thin paper 94 the coiled form.

[0084] Moreover, since the cast away of the adhering ink pigment is carried out with the thin paper 94, it has the pollution-control effectiveness of equipment or an environment. Furthermore, the configuration of a stripper is easy and there are manufacture cost and an advantage which can also make a running cost cheap since it can do at a low price and thin paper is used. In addition, it is made to interlock delivery equipment 41 and a take-up motion 42, or you may make it drive a reel as well as [ equipment / 41 / delivery ] a take-up motion 42 by a motor etc. like the 5th operation gestalt so that excessive tension may not join the thin paper 94.

[0085] Next, when the 7th operation gestalt of this invention is explained, drawing 16 is drawing

showing the waste fluid regenerative apparatus and the waste fluid playback approach of a printing machine as the 7th operation gestalt of this invention, and (a) is the horizontal sectional view [the C-C arrowed cross-section Fig. of (b)], and the typical sectional view which looked at (b) from [ of a waste fluid reservoir container ] the side face. Among drawing 16 , drawing 1 - drawing 15 , and a same sign show the same thing, and omit a part of explanation about these.

[0086] As shown in drawing 16 (a) and (b), with this operation gestalt, the cylinder-like ground electrode 80 is arranged in the center section of this container 2 for the container 2 as a square (square) by plane view. The impression electrode plate 35 is formed in the shape of a cylinder, and is arranged in the periphery of the ground electrode 80 of the shape of this cylinder. Here, a inner layer, an outer layer, and two-layer are allotted, and the impression electrode plate 35 allotted metal network 35a of the shape of a wire gauze which carried out the cylindrical shape to the 1st layer, and has allotted the same wire gauze electrode 35b also as a two-layer eye.

[0087] And more for example, than the 1st layer, the seal of approval of the high-pressure electrical potential difference of 12kV (kilovolt) is carried out to 10kV (kilovolt) and a two-layer eye at electrode 35a of the 1st layer near the cylinder-like ground electrode 80. These electrical-potential-difference values are one standard, and are not limited to this. Moreover, the rotation drive of the cylinder electrode 80 is carried out by the motor 81. Furthermore, the scraping blade 82 is pressed against this cylinder electrode 80, and the scraping blade 82 which was pressed against the periphery of the cylinder electrode 80 and \*\*\*\*ed when the cylinder electrode 80 rotated has failed to scratch [ come ] the ink pigment 61 adhering to the front face of the cylinder electrode 80.

[0088] Since the waste fluid regenerative apparatus of the printing machine as the 7th operation gestalt of this invention is constituted as mentioned above, it supplies waste fluid (polluted penetrant remover) to the injection layer a of a center section. Here, if the seal of approval of the electrical potential difference is carried out to the impression electrode plates 35a and 35b, an ink pigment will adhere to the cylindrical electrode 80 connected to the ground 8. Here, the ink pigment 61 adhering to the cylindrical electrode 80 fails to be scratched by the scraping blade 82, and this ink pigment 61 that failed to be scratched is stored in the lower part of a container 2.

[0089] Although the ink pigment 61 collected on the container 2 lower part can be periodically taken out to the container 2 exterior, it may drop the ink pigment 61 into flush tank partial 9A of the water 9 separated depending on the case, and may carry out the cast away of the ink pigment 61 together with water. According to such this equipment, since the ground electrode 80 is a cylinder-like, there is an advantage to which an ink pigment tends to adhere, and an equipment configuration is easy and has manufacture cost, a running cost, and the advantage made at a low price.

[0090] Next, when the 8th operation gestalt of this invention is explained, drawing 17 is drawing showing the waste fluid regenerative apparatus and the waste fluid playback approach of a printing machine as the 8th operation gestalt of this invention, and the typical sectional view which looked at (a) from [ of a waste fluid reservoir container ] the side face, and (b) are the D-D arrowed cross-section Figs. of (a). Among drawing 17 , drawing 1 - drawing 16 , and a same sign show the same thing, and omit a part of explanation about these.

[0091] As shown in drawing 17 (a) and (b), with this operation gestalt, the thing of a rotating-disc method is used as a ground electrode plate in the thing of the 1st operation gestalt. That is, the ground electrode plate 83 disc-like in the waste fluid injection layer a in a container 2 is supported to revolve by the revolving shaft 85 of a motor 86. And the insulator 84 is stuck on the opposite side of the ground electrode plate 83 so that the ink pigment 61 may adhere only to one side of this ground electrode plate 83. Moreover, when the electrode plate 83 rotates, it is failed for the scraping blade 87 for scratching the adhering ink pigment 61 to be formed in the ink pigment adhesion side side of the ground electrode plate 83, and for it to be pushed against the adhesion side, and to have come to scratch the ink pigment 61 adhering to the ground electrode plate 83 from the electrode plate 83 with a blade 87.

[0092] What is necessary is just to discharge this periodically, since the ink pigment 61 which scratches from the electrode plate 83, is dropped and failed to be scratched collects on the lower part of a container 2 with a blade 87 when the electrode plate 83 rotates the ink pigment 61 which adhered to the

ground electrode plate 83 since the waste fluid regenerative apparatus of the printing machine as the 8th operation gestalt of this invention was constituted as mentioned above. By this, it can be easy, removal of the ink pigment which adhered with \*\* so that the configuration of equipment might be simple and the manufacture cost of equipment could also be reduced can be ensured now, and there is an advantage which a rate of operation can also raise.

[0093] Next, when the 9th operation gestalt of this invention is explained, drawing 18 is drawing showing the waste fluid regenerative apparatus and the waste fluid playback approach of a printing machine as the 10th operation gestalt of this invention, and (a) is the horizontal sectional view [the E-E arrowed cross-section Fig. of (b)], and the typical sectional view which looked at (b) from [ of a waste fluid reservoir container ] the side face. Among drawing 18 , drawing 1 - drawing 17 , and a same sign show the same thing, and omit a part of explanation about these.

[0094] As shown in drawing 18 (a) and (b), with the equipment of this operation gestalt, the metal sheet 95 is adopted as a ground electrode, and this metal sheet 95 is arranged to an endless method. That is, in the 1st [ in a container ] field (injection layer) a, the metal sheet 95 constituted by endless is held by the roll kneaders 96 and 96 of a pair, and it has it. A rotation drive comes to be carried out by the motor 98, and one roll kneader 96 drives the endless metal sheet 95 with the roll kneader 96 of one of these through a cage.

[0095] And the ink pigment 61 is made to adhere to the front face of the metal sheet 95 by using this metal sheet 95 as a ground electrode. Moreover, the scraping blade 97 is forced on the front face of this metal sheet 95, and it is failed to have come to scratch the ink pigment 61 adhering to the front face of the metal sheet 95 with this scraping blade 97.

[0096] Since the waste fluid regenerative apparatus of the printing machine as the 9th operation gestalt of this invention is constituted as mentioned above, if the ink pigment 61 adheres to the front face of the metal sheet 95 as a ground electrode, it will fail to scratch the ink pigment 61 with which the scraping blade 97 forced on the front face of this metal sheet 95 adhered to the front face of the metal sheet 95. In this way, although the ink pigment which failed to be scratched collects on the lower part in a container 2, it should just discard this to the exterior periodically. Thus, according to equipment, since the configuration is simple, and there are also few burdens of manufacture cost and they are easy to maintain, a running cost also has the advantage which becomes cheap in this operation gestalt.

[0097] Next, when the 10th operation gestalt of this invention is explained, drawing 19 is the typical sectional view showing the waste fluid regenerative apparatus and the waste fluid playback approach of a printing machine as the 9th operation gestalt of this invention. Among drawing 19 , drawing 1 - drawing 18 , and a same sign show the same thing, and omit a part of explanation about these. The electrode consists of these operation gestalten so that anti-electric field cannot happen easily.

[0098] that is, as show in drawing 19 , the point make into the configuration which make it easy to flow + charge of the ink pigment which be use the metal of the shape of a conductive projection or an eye of a network for the ground electrode 88 , and adhered to it with the equipment of this operation gestalt , and cannot be easily influence of anti-electric field be the description . Moreover, supersonic vibration of the ground electrode 88 is carried out, and the ultrasonic vibration generator system 89 which makes the penetrant remover 62 in the solution layer of a container 2 remelt the adhering ink pigment is attached.

[0099] Since the waste fluid regenerative apparatus of the printing machine as the 10th operation gestalt of this invention does not have a fear of the ink pigment 61 to which the ground electrode 88 could not receive effect of anti-electric field easily, and once adhered dissolving into the solution layer of a container 2 since it is constituted as mentioned above, the use depended without the maintenance of a long period of time (according to an experiment) is possible for it. Moreover, after prolonged continuous duty (in an experiment, it adhered 5mm in thickness in one month), with the ultrasonic vibration generator system 89, carry out supersonic vibration of the ground electrode 88, the penetrant remover 62 in the solution layer of a container 2 is made to remelt the adhering ink pigment 61, and the ink pigment 61 is discarded the whole penetrant remover 62 after that.

[0100] According to such removal technique, a prolonged maintenance becomes unnecessary, it can be



effective in abandonment working efficiency improving, and, for this reason, a running cost can be reduced now. As mentioned above, although the operation gestalt of this invention was explained, this invention is not limited to this operation gestalt, in the range which does not deviate from the meaning of this invention, can deform variously and can be carried out. For example, a large number installation of the metal-electrode plate 30 may be carried out more into a container 2. Moreover, the metal-electrode plate 30 is not limited in the shape of a wire gauze just possible [ circulation of waste fluid ].

[0101] [Effect of the Invention] As explained in full detail above, according to the waste fluid playback approach (claim 20) of the waste fluid regenerative apparatus (claims 1 and 2) of the printing machine of this invention, or a printing machine By generating electrostatic field in waste fluid, carrying out the electrostatic condensation of above-mentioned water and an above-mentioned ink pigment from this waste fluid using the electrophoresis of this ink pigment by this electrostatic field, and making this waste fluid divide into this penetrant remover, the above-mentioned water, and an ink pigment It can be efficient, playback of a penetrant remover can be performed now, the abandonment cost of washing waste fluid can be reduced, and since the running cost concerning washing of a printing machine can be reduced as a result, the advantage which can aim at now improvement in the productivity of a printing machine is acquired.

[0102] By making into the high voltage the electrical potential difference which carries out a seal of approval to two or more above-mentioned metal-electrode plates as it is isolated from this ground electrode plate, an ink pigment can be certainly condensed and adsorbed now to a ground electrode plate, and waste fluid reproducibility ability improves (claim 3). By setting up so that the direction inter-electrode [ near this ground electrode plate ] may become larger than inter-electrode [ far from this ground electrode plate ], an ink pigment can be certainly condensed and adsorbed now to a ground electrode plate, and waste fluid reproducibility ability improves (claim 4).

[0103] Two or more metal-electrode plates are made approach most the 1 side in this waste fluid reservoir container for them this ground electrode plate and made. this ground electrode plate -- and -- this -- If it constitutes so that the penetrant removers reproduced from the side else [ in this waste fluid reservoir container that has been put in order and arranged towards a side besides in this waste fluid reservoir container from this 1 side, supplied this waste fluid to the 1 side in this waste fluid reservoir container, and is most separated from this 1 side / this ] may be collected Playback of waste fluid and the reproduced penetrant remover can be smoothly used now (claim 5).

[0104] By connecting this waste fluid regenerative apparatus to the blanket drum washing station which washes the blanket drum of a printing machine, reproducing waste fluid, the reproduced penetrant remover can use, a blanket drum can be washed, and workability improves sharply (claim 6). By preparing the sedimentation section which makes the water of this ground electrode plate by the side of one in this waste fluid reservoir container separated from this waste fluid sediment caudad, the water separated from waste fluid is collected certainly, and can be reused now (claim 7).

[0105] Moreover, washing waste fluid can be regenerated by offering the scraping plate which scratches the ink pigment which condensed and adhered to this ground electrode plate, and is made to secede from this ground electrode plate, without exchanging electrodes (claim 8). Moreover, arrange this ground electrode in the lower part in this waste fluid reservoir container at an abbreviation horizontal, and this metal-electrode plate is arranged above this ground electrode in this waste fluid reservoir container at an abbreviation horizontal. While preparing the 1st recovery hole for collecting the penetrant removers reproduced by the upper part in this waste fluid reservoir container By preparing the 2nd recovery hole for collecting the ink pigments and water which were separated into the lower part in this waste fluid reservoir container from the penetrant remover Recovery of the penetrant remover separated from waste fluid and recovery of water and an ink pigment can be easily performed now, respectively, and reuse of a penetrant remover and abandonment of water and an ink pigment can be performed now more easily and smoothly (claim 9).

[0106] Approach one side attachment wall in this waste fluid reservoir container, arrange a bridge wall, constitute as the waste fluid injection section into which the field divided by this bridge wall and this

one side attachment wall throws this waste fluid, and counter with this one side attachment wall in this waste fluid reservoir container, and also this metal-electrode plate Furthermore, a side attachment wall, By arranging between these bridge walls, separation of the penetrant remover from waste fluid, water, and an ink pigment can be performed more smoothly (claim 10).

[0107] Moreover, waste fluid can circulate a metal-electrode plate now certainly by using two or more above-mentioned metal-electrode plates as a wire gauze-like metal-electrode plate, and it becomes easy to acquire the above-mentioned effectiveness (claim 11). Furthermore, it comes to be able to make easier recovery and abandonment of an ink pigment by making this ground electrode withdrawal to the exterior of this waste fluid reservoir container (claim 12).

[0108] Moreover, while this ground electrode be wind by the coiled form, after the metal sheet ( for example, aluminum foil) which can be roll round constitute, send out this metal sheet from send equipment and pass the inside of a waste fluid reservoir container, while being able to make easier recovery and abandonment of an ink pigment by make it roll round to a take-up motion, it contribute also to the dirt prevention in a waste fluid reservoir container, or purification of a penetrant remover to reuse ( claim 13).

[0109] Moreover, after sending out the thin paper of the shape of a roll which covers the front face of this ground electrode, sending out from equipment and passing the inside of a waste fluid reservoir container, while being able to make easier recovery and abandonment of an ink pigment by making it roll round to a take-up motion, it contributes also to the dirt prevention in a waste fluid reservoir container, or purification of a penetrant remover to reuse (claim 14). Moreover, the metal bar of the shape of a pivotable cylindrical shape constitutes this ground electrode. Also by constituting this metal-electrode plate in the shape of a cylinder so that the exterior of this ground electrode may be surrounded, and having the blade which scratches this ink pigment that adhered to the outside surface of this metal bar in slide contact with this metal bar While being able to make easier recovery and abandonment of an ink pigment, it contributes also to the dirt prevention in a waste fluid reservoir container, or purification of a penetrant remover to reuse (claim 15).

[0110] Moreover, while being able to make easier recovery and abandonment of an ink pigment also by a pivotable metal disk's constituting this ground electrode, and having the blade which scratches this ink pigment that adhered to the outside surface of this metal disk in slide contact with this metal disk, it contributes also to the dirt prevention in a waste fluid reservoir container, or purification of a penetrant remover to reuse (claim 16). Moreover, while being able to make easier recovery and abandonment of an ink pigment also by an endless metal sheet's constituting this ground electrode, and having the driving gear which carries out the rotation drive of the metal sheet endless [ this ], and the blade which scratches this ink pigment that adhered to the outside surface of this metal sheet in slide contact with the metal sheet endless [ this ], it contributes also to the dirt prevention in a waste-fluid reservoir container, or purification of a penetrant remover to reuse (claim 17).

[0111] Furthermore, since there is no fear of the ink pigment 61 to which the ground electrode stopped easily being able to receive effect of anti-electric field, and once adhered by constituting this ground electrode with the metal of the shape of a conductive projection or an eye of a network dissolving into the solution layer of a container 2, there is use of the equipment twisted without a prolonged maintenance possible (claim 18). In this case, if the ultrasonic rocking equipment which makes the ink pigment which excited this ground electrode and adhered to this ground electrode remelt in a penetrant remover is equipped, it comes to be able to make removal of the adhering ink pigment easier (claim 19).

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[Translation done.]